CLAIMS

1. A diversity reception process comprising:

receiving at least two diversity radio signals each being composed of at least one component, and each component containing a sequence of data units which are subject to intermittent errors from one to E data units in duration wherein E is the largest number of consecutive errors that can occur on a given digital radio design;

demodulating the received diversity signals into streams of corresponding data units and their baseband signal deviation (SD) levels;

comparing corresponding data units to identify at least one data unit in the at least two diversity radio signals which differ;

when no difference in at least one corresponding data unit is identified outputting one of the at least two sequences of corresponding data units; and

when at least one difference in at least one data unit of corresponding data units is identified processing the baseband signal deviation (SD) levels of all data units within the at least one difference of the sequence of corresponding data units to output each data unit within each difference having the highest probability of not containing an error.

2. A diversity radio reception process in accordance with claim 1 wherein:
prior to transmission, adding error correction data to the transmitted data such that after the reception of at least two diversity signals and the selection of the most likely correct data units, error correction data is used to further reduce errors in the resulting output data.

3. A diversity radio reception process in accordance with claim 1 wherein:
a data unit is the smallest unit of information resulting from conventional demodulation of digitally modulated signals and comprises one or more bits depending on the modulation scheme used;
a few bit baseband signal deviation (SD) level, which is proportional to the difference between the theoretically expected and actual voltage level of a digitally modulated signal for that particular data unit, is added to each demodulated data unit;
and the processing of each difference comprises:
processing the baseband signal deviation (SD) level of each data unit within each difference of the at least two diversity radio signals and the baseband signal deviation (SD) level of at least one data unit immediately before and after each difference to determine for each difference the diversity signal component which has the highest probability of containing correct data unit(s) within that difference.

4. A diversity radio reception process in accordance with claim 3 wherein:

processing of baseband signal deviation (SD) levels includes computing a weighted distortion parameter which is the product of a function of the baseband signal deviation (SD) level and the weight of a given data unit;

for each difference of each of the at least two diversity radio signals summing the weighted distortion parameters for each of the differing data units and the at least one data unit immediately before and after each difference to produce a total;

comparing the total of each of the at least two diversity radio signals; and

based on the comparison of the total, choosing which diversity signal's data unit(s) are outputted when a difference in at least one data unit of at least two corresponding diversity signal components occurs.

5. A diversity radio reception process in accordance with claim 4 wherein:

the function of the baseband signal deviation (SD) level comprises a function which approximates the squaring of the baseband signal deviation (SD) level by means of a power-of-two multiplier;

the weight of a given data unit is an integer or non-integer value which is used to place emphasis on distortion parameters corresponding to data units near the beginning and end of each difference;

the smallest total identifies which diversity signal's data unit(s) are outputted when a difference in at least one data unit of at least two corresponding diversity signal components occurs.

6. A diversity radio reception process in accordance with claim 5 wherein:

the squaring function is augmented to a more complex function based on error burst characteristics in order to optimize the identification of a correct diversity signal for specific digital radio systems.

7. A diversity radio reception process in accordance with claim 2 wherein:

a data unit is the smallest unit of information resulting from conventional demodulation of digitally modulated signals and comprises one or more bits depending on the modulation scheme used;

a few bit baseband signal deviation (SD) level, which is proportional to the difference between the theoretically expected and actual voltage level of a digitally modulated signal for that particular data unit, is added to each demodulated data unit;

and the processing of each difference comprises:

processing the baseband signal deviation (SD) level of each data unit within each difference of the at least two diversity radio signals and the baseband signal deviation (SD) level of at least one data unit immediately before and after each difference to determine for each difference the diversity signal component which has the highest probability of containing correct data unit(s) within that difference.

8. A diversity radio reception process in accordance with claim 7 wherein:

processing of baseband signal deviation (SD) levels includes computing a weighted distortion parameter which is the product of a function of the baseband signal deviation (SD) level and the weight of a given data unit;

for each difference of each of the at least two diversity radio signals summing the weighted distortion parameters for each of the differing data units and the at least one data unit immediately before and after each difference to produce a total;

comparing the total of each of the at least two diversity radio signals; and

based on the comparison of the total, choosing which diversity signal's data unit(s) are outputted when a difference in at least one data unit of at least two corresponding diversity signal components occurs.

9. A diversity radio reception process in accordance with claim 8 wherein:

the function of the baseband signal deviation (SD) level comprises a function which approximates the squaring of the baseband signal deviation (SD) level by means of a power-of-two multiplier;

the weight of a given data unit is an integer or non-integer value which is used to place emphasis on distortion parameters corresponding to data units near the beginning and end of each difference;

the smallest total identifies which diversity signal's data unit(s) are outputted when a difference in at least one data unit of at least two corresponding diversity signal components occurs.

10. A diversity radio reception process in accordance with claim 1 wherein:

the at least two received diversity radio signals are aligned within a fraction of a time duration of an individual data unit (symbol period T_S);

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

11. A diversity radio reception process in accordance with claim 10 wherein:

in order to provide enough time for the processing of the longest possible error burst, delaying all data units by (E+P) symbol periods T_S, where P is an integer which represents a processing delay.

12. A diversity radio reception process in accordance with claim 2 wherein:

the at least two received diversity radio signals are aligned within a fraction of a time duration of an individual data unit (symbol period T_S);

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

13. A diversity radio reception process in accordance with claim 12 wherein:

in order to provide enough time for the processing of the longest possible error burst, delaying all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

14. A diversity radio reception process in accordance with claim 3 wherein:

the at least two received diversity radio signals are aligned within a fraction of a time duration of an individual data unit (symbol period T_S);

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

15. A diversity radio reception process in accordance with claim 14 wherein:

in order to provide enough time for the processing of the longest possible error burst, delaying all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

16. A diversity radio reception process in accordance with claim 4 wherein:

the at least two received diversity radio signals are aligned within a fraction of a time duration of an individual data unit (symbol period T_S);

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

17. A diversity radio reception process in accordance with claim 16 wherein:

in order to provide enough time for the processing of the longest possible error burst, delaying all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

18. A diversity radio reception process in accordance with claim 5 wherein:

the at least two received diversity radio signals are aligned within a fraction of a time duration of an individual data unit (symbol period T_s);

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

19. A diversity radio reception process in accordance with claim 18 wherein:

in order to provide enough time for the processing of the longest possible error burst, delaying all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

20. A diversity radio reception process in accordance with claim 7 wherein:

the at least two received diversity radio signals are aligned within a fraction of a time duration of an individual data unit (symbol period T_s);

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

21. A diversity radio reception process in accordance with claim 20 wherein:

in order to provide enough time for the processing of the longest possible error burst, delaying all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

22. A diversity radio reception process in accordance with claim 8 wherein:

the at least two received diversity radio signals are aligned within a fraction of a time duration of an individual data unit (symbol period T_S);

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

23. A diversity radio reception process in accordance with claim 22 wherein:

in order to provide enough time for the processing of the longest possible error burst, delaying all data units by (E+P) symbol periods T_S, where P is an integer which represents a processing delay.

24. A diversity radio reception process in accordance with claim 9 wherein:

the at least two received diversity radio signals are aligned within a fraction of a time duration of an individual data unit (symbol period T_S);

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

25. A diversity radio reception process in accordance with claim 24 wherein:

in order to provide enough time for the processing of the longest possible error burst, delaying all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

26. A diversity reception system comprising:

at least two radio receivers with each receiver receiving one of at least two diversity radio signals each being composed of at least one component, and each component containing a sequence of data units which are subject to intermittent errors from one to E data units in duration wherein E is the largest number of consecutive errors that can occur on a given digital radio design;

a data selector, coupled to the at least two radio receivers, wherein the data selector demodulates the received diversity signals into streams of corresponding data units and their baseband signal deviation (SD) levels, compares corresponding data units to identify at least one data unit in the at least two diversity radio signals which differ, when no difference in at least one corresponding data unit is identified outputs one of the at least two sequences of corresponding data units and, when at least one difference in at least one data unit of corresponding data units is identified, processes the baseband signal deviation (SD) levels of all data units within the at least one difference of the sequence of corresponding data units and outputs each data unit within each difference having the highest probability of not containing an error.

27. A diversity radio reception system comprising:

a diversity radio reception system in accordance with claim 26; and

Forward Error Correction (FEC) decoder, coupled to the data selector, wherein the decoder uses error correction data inserted prior to transmission in order to further reduce errors remaining in the data selector output data.

28. A diversity radio reception system in accordance with claim 26 wherein:

a data unit is the smallest unit of information resulting from conventional demodulation of digitally modulated signals and comprises one or more bits depending on the modulation scheme used;

a few bit baseband signal deviation (SD) level, which is proportional to the difference between the theoretically expected and actual voltage level of a digitally modulated signal for that particular data unit, is added to each demodulated data unit;

and the processing of each difference by the data selector comprises:

processing the baseband signal deviation (SD) level of each data unit within each difference of the at least two diversity radio signals and the baseband signal deviation (SD) level of at least one data unit immediately before and after each difference to determine for each difference the diversity signal component which has the highest probability of containing correct data unit(s) within that difference.

29. A diversity radio reception system in accordance with claim 28 wherein processing of baseband signal deviation (SD) levels by the data selector includes:

computing a weighted distortion parameter which is the product of a function of the baseband signal deviation (SD) level and the weight of a given data unit;

for each difference of each of the at least two diversity radio signals summing the weighted distortion parameters for each of the differing data units and the at least one data unit immediately before and after each difference to produce a total;

comparing the total of each of the at least two diversity radio signals; and

based on the comparison of the total, the data selector then chooses which diversity signal's data unit(s) are outputted when a difference in at least one data unit of at least two corresponding diversity signal components occurs.

30. A diversity radio reception system in accordance with claim 29 wherein:

the function of the baseband signal deviation (SD) level comprises a function which approximates the squaring of the baseband signal deviation (SD) level by means of a power-of-two multiplier;

the weight of a given data unit is an integer or non-integer value which is used to place emphasis on distortion parameters corresponding to data units near the beginning and end of each difference;

the smallest total identifies which diversity signal's data unit(s) are outputted by the data selector when a difference in at least one data unit of at least two corresponding diversity signal components occurs.

31. A diversity radio reception system in accordance with claim 30 wherein:

the squaring function is augmented to a more complex function based on error burst characteristics in order to optimize the identification of a correct diversity signal for specific digital radio systems.

32. A diversity radio reception system in accordance with claim 27 wherein:

a data unit is the smallest unit of information resulting from conventional demodulation of digitally modulated signals and comprises one or more bits depending on the modulation scheme used;

a few bit baseband signal deviation (SD) level, which is proportional to the difference between the theoretically expected and actual voltage level of a digitally modulated signal for that particular data unit, is added to each demodulated data unit;

and the processing of each difference by the data selector comprises:

processing the baseband signal deviation (SD) level of each data unit within each difference of the at least two diversity radio signals and the baseband signal deviation (SD) level of at least one data unit immediately before and after each difference to determine for each difference the diversity signal component which has the highest probability of containing correct data unit(s) within that difference.

33. A diversity radio reception system in accordance with claim 32 wherein processing of baseband signal deviation (SD) levels by the data selector includes:

computing a weighted distortion parameter which is the product of a function of the baseband signal deviation (SD) level and the weight of a given data unit;

for each difference of each of the at least two diversity radio signals summing the weighted distortion parameters for each of the differing data units and the at least one data unit immediately before and after each difference to produce a total;

comparing the total of each of the at least two diversity radio signals; and

based on the comparison of the total, the data selector then chooses which diversity signal's data unit(s) are outputted when a difference in at least one data unit of at least two corresponding diversity signal components occurs.

34. A diversity radio reception system in accordance with claim 33 wherein:

the function of the baseband signal deviation (SD) level comprises a function which approximates the squaring of the baseband signal deviation (SD) level by means of a power-of-two multiplier;

the weight of a given data unit is an integer or non-integer value which is used to place emphasis on distortion parameters corresponding to data units near the beginning and end of each difference;

the smallest total identifies which diversity signal's data unit(s) are outputted by the data selector when a difference in at least one data unit of at least two corresponding diversity signal components occurs.

35. A diversity radio reception system in accordance with claim 26 wherein:

the at least two diversity receivers align their signals within a fraction of a time duration of an individual data unit (symbol period T_S); and

the processing performed by the data selector includes:

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity

receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

36. A diversity radio reception system in accordance with claim 35 wherein:

in order to provide enough time for the processing of the longest possible error burst, the data selector delays all data units by (E+P) symbol periods T_S, where P is an integer which represents a processing delay.

37. A diversity radio reception system in accordance with claim 27 wherein:

the at least two diversity receivers align their signals within a fraction of a time duration of an individual data unit (symbol period T_S); and

the processing performed by the data selector includes:

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

38. A diversity radio reception system in accordance with claim 37 wherein:

in order to provide enough time for the processing of the longest possible error burst, the data selector delays all data units by (E+P) symbol periods T_S, where P is an integer which represents a processing delay.

39. A diversity radio reception system in accordance with claim 28 wherein:

the at least two diversity receivers align their signals within a fraction of a time duration of an individual data unit (symbol period T_S); and

the processing performed by the data selector includes:

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

40. A diversity radio reception system in accordance with claim 39 wherein:

in order to provide enough time for the processing of the longest possible error burst, the data selector delays all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

41. A diversity radio reception system in accordance with claim 29 wherein:

the at least two diversity receivers align their signals within a fraction of a time duration of an individual data unit (symbol period T_s); and

the processing performed by the data selector includes:

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

42. A diversity radio reception system in accordance with claim 41 wherein:

in order to provide enough time for the processing of the longest possible error burst, the data selector delays all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

43. A diversity radio reception system in accordance with claim 30 wherein:

the at least two diversity receivers align their signals within a fraction of a time duration of an individual data unit (symbol period T_s); and

the processing performed by the data selector includes:

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

44. A diversity radio reception system in accordance with claim 43 wherein:

in order to provide enough time for the processing of the longest possible error burst, the data selector delays all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

45. A diversity radio reception system in accordance with claim 32 wherein:

the at least two diversity receivers align their signals within a fraction of a time duration of an individual data unit (symbol period T_s); and

the processing performed by the data selector includes:

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

46. A diversity radio reception system in accordance with claim 45 wherein:

in order to provide enough time for the processing of the longest possible error burst, the data selector delays all data units by (E+P) symbol periods T_s, where P is an integer which represents a processing delay.

47. A diversity radio reception system in accordance with claim 33 wherein:

the at least two diversity receivers align their signals within a fraction of a time duration of an individual data unit (symbol period T_S); and
the processing performed by the data selector includes:

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

48. A diversity radio reception system in accordance with claim 47 wherein:

in order to provide enough time for the processing of the longest possible error burst, the data selector delays all data units by (E+P) symbol periods T_S, where P is an integer which represents a processing delay.

49. A diversity radio reception system in accordance with claim 34 wherein:

the at least two diversity receivers align their signals within a fraction of a time duration of an individual data unit (symbol period T_S); and
the processing performed by the data selector includes:

after the reception of the at least two diversity radio signals declaring one diversity radio signal a reference signal for resolving the relative carrier phase difference between diversity receivers, deriving a clock signal from the reference signal and using the clock signal as a time reference during the baseband processing of the at least two diversity radio signals;

identifying the corresponding data units of the at least two diversity signals and aligning them as well as their respective baseband signal deviation (SD) levels with the data units of the reference signal;

determining a bit error rate of the at least two diversity signals;

comparing the bit error rate of the reference signal to a first maximum allowable bit error rate and when it is greater than the first maximum allowable bit error rate using one of the other diversity radio signals as a new reference signal as long as its bit error rate is not greater than a second maximum allowable bit error rate which is smaller than the first maximum allowable bit error rate.

50. A diversity radio reception system in accordance with claim 49 wherein:

in order to provide enough time for the processing of the longest possible error burst, the data selector delays all data units by (E+P) symbol periods T_S, where P is an integer which represents a processing delay.